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Indian Standard

SPECIFICATION FOR BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

(First Reprint AUGUST 1981)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 1964

Gr. 3

IS : 2616-1963 SPECIFICATION FOR BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

AMENDMENT NO. 1 APRIL 1968

Corrigenda

(*Page* 8, *clause* **A-1**, *line* 2) — Substitute 'brush' *for* 'brushes'.

(*Page* 9, *Appendix* A, *Devanagari name of timber* **'chickrassi')**— Substitute ' **चिकरासी** ' **चिकरसी** *for* ' '.

Alterations

(*Page* 4, *clause* **0.6**) — Delete the clause and re-number clause '0.7 ' as ' 0.6'.

(*Page* 6, *clause* **3.1.3**, *line* 1) — Substitute '9.5 mm' *for* '9.5 mm (or $\frac{3}{8}$ in)'.

(*Page 6, clause* **3.1.4**, *lines* 1 *and* 2) — Substitute '0.45 mm to 0.56 mm' *for* '0.450 mm to 0.560 (or 26 to 24 SWG)'.

(*Page* 5, *Fig.* 1 and *Page* 6, *clause* **3.1.5**, *line* 1) — Substitute '0.90 mm ' *for* '0.900mm (or 20 SWG) '.

(*Page* 6, *clause* **3.2.2**) — Substitute the following for the existing clause:

' **3.2.2** The tolerance on the linear dimensions shall be as follows:

Nominal Dimension mm	*Tolerance* mm
Up to 15	±0.5
Over 15 but below 40	±1.0
40 and above	±1.5'

(*Page* 7, *clause* **3.5.2.1**) — Substitute the following for the existing clause:

'**3.5.2.1** The total weight of filling material per brush shall be 75g. A tolerance of ±5 percent shall be allowed in the weight of the filling material provided the average weight of the filling per brush in any lot is as specified.'

(*Page* 8, *clause* **5.2**) — Substitute the following for the existing clause:

'**5.2** The indentor or the inspection authority shall retain one of the three samples approved against each item till the completion of the order.'

(*Page* 8, *Appendix* A) — Delete the following species of timber: 'badam बादाम *Primus amygdalus* Batsch., fam. Rosacæ'.

AMENDMENT NO. 2 JULY 1575

Alteration

(*Page* 6, *clause* **3.1.2.2**) — Substitute the following for the existing clause:

'**3.1.2.2** The timber shall be reasonably straight-grained and well-seasoned to a moisture content not exceeding 15 percent when tested by the electronic moisture meter method. In case of dispute, the oven-dry method shall be used (*see* Appendix C).'

Addendum

(*Page* 11, *clause* **B-2.1**) — Add the following new appendix **B-2.1:**

APPENDIX C

(*Clause* 3.1.2.2)

DETERMINATION OF MOISTURE CONTENT OF TIMBER USED IN BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

C-1. TEST SPECIMEN

C-1.1 The entire block used in brushes, cleaning tank and commode and lavatory, may form the test specimen for the determination of moisture content, or a coupon cut from the test specimen may, as well, be used for moisture content determination. When for any reason additional determination of moisture content is required, separate samples shall be prepared from the sample material as is used in preparing the test specimens. Smaller specimens may be used when deemed necessary. The test shall be carried out immediately after cutting the specimen.

C-2. PROCEDURE

C-2.1 Weigh accurately each test specimen. This specimen shall then be dried in a ventilated oven at a temperature of 105 ± 2°C until the weight becomes constant between two successive weighings made at an interval of not less than one hour.

C-3. CALCULATION

C-3.1 Moisture content, expressed as a percentage of the oven-dry mass $= 100 \times \frac{W_1 - W_0}{W_0}$

where

W_1 = initial mass in g of the test specimen, and
W_0 = oven-dry mass in g of the test specimen.

(CDC 31)

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Indian Standard

SPECIFICATION FOR BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

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Indian Standard

SPECIFICATION FOR BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 23 December 1963, after the draft finalized by the Brushware Sectional Committee had been approved by the Chemical Division Council.

0.2 Brushes with palmyra fibre are in great demand by the Indian Railways particularly, as well as by others for cleaning of commodes and squat pans having either short or long chutes. Some time back, on investigation, it was found that as many as four different types of commode and lavatory brushes were in use in different regions of the Indian Railways. Samples of all these different types of brushes were specially manufactured and tried out in order to determine the comparative ease with regard to the use of these brushes. On the basis of these trials, it was agreed that two different types of brushes, namely, brush for commode chutes, the round-head type which is specially suitable for cleaning long chutes, and brush for commode and lavatory, the hockey-shaped type specially suitable for cleaning squat pans and short length chutes, may be recommended as the two preferred types.

0.2.1 It was later found that a similar type of brush is also used for cleaning water tanks for which a specification IND/GS/1047 Brushes, Cleaning Tank, Ministry of Defence, Government of India exists. Consequently, the concerned Sectional Committee agreed to re-name this brush as brush, (i) cleaning tank, and (ii) commode and lavatory.

0.3 This specification covering the requirements of brush, (i) cleaning tank, and (ii) commode and lavatory, is essentially based on the type of brush covered by EX-EPR Drg. No. 104 Brush, Commode and Lavatory, Controller of Stores, Ministry of Railways, and INDGS/1047 Brushes, Cleaning Tank, Ministry of Defence, Government of India. This type of brush is recommended for use for commodes provided with short length chutes for squat pans and also for cleaning water tanks. This specification which has been drawn up with the collaboration of all concerned, particularly keeping in view its inherent advantages for the purpose recommended, is expected to fulfil a long-felt need of brush manufacturers for rationalizing production of this type of brush. It is also expected to assist users in selecting brushes of acceptable quality.

0.4 Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to the latest version of the standard.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960 Rules for Rounding Off Numerical Values (*Revised*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

0.6 Metric system has been adopted in India and all quantities and dimensions in this standard have been given in this system. Non-metric values to which the brushware industry has been accustomed are also given in brackets, wherever necessary, for the sake of smooth changeover.

0.7 This standard is intended chiefly to cover the technical provisions relating to brush, (i) cleaning tank, and (ii) commode and lavatory; and it does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This standard prescribes requirements and methods of test for brush, (i) cleaning tank, and (ii) commode and lavatory.

2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given in 2 of IS : 384-1961 Specification for Brushes, Paints and Varnishes, Flat *(Revised)* shall apply.

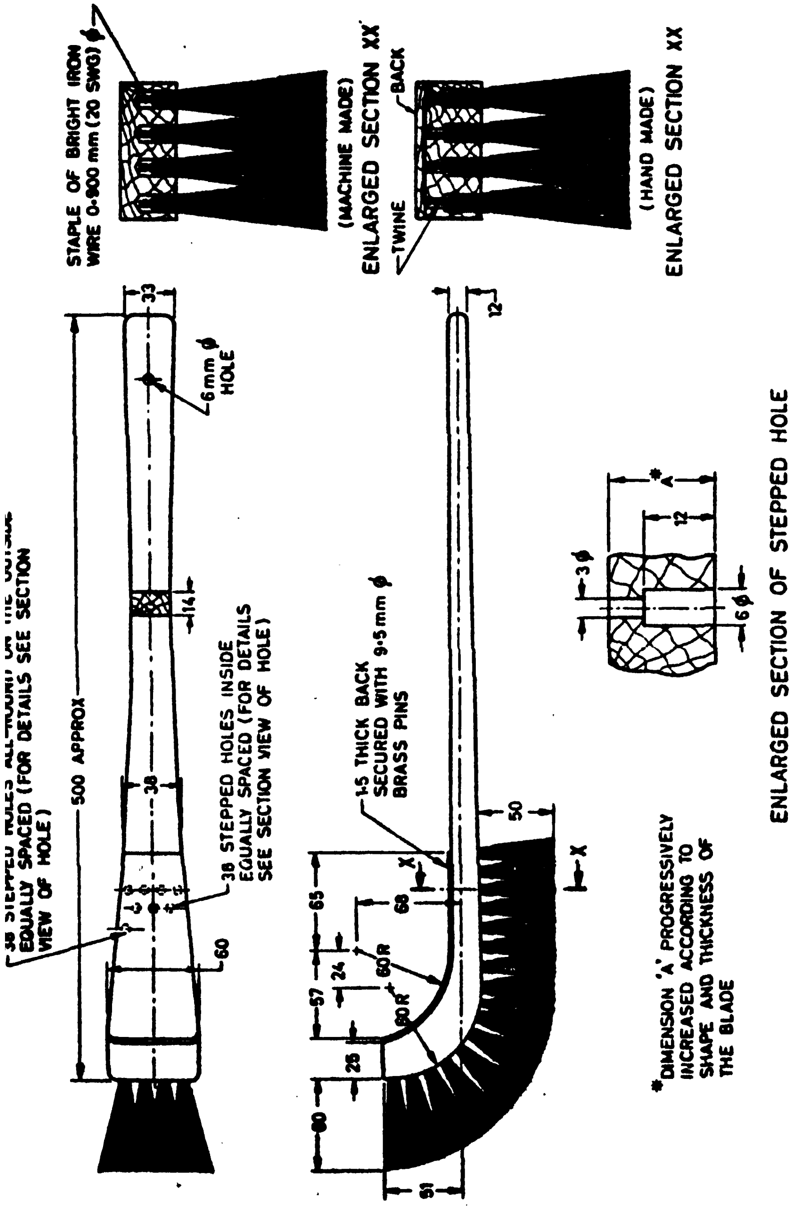
3. REQUIREMENTS

3.1 Materials — The brushes shall be manufactured from the following materials.

3.1.1 *Filling Material* — This shall consist of palmyra (*Borassus flabellifer* Linn. fam. *Palmæ)* fibre which shall be clean, free from dust and other extraneous matter.

3.1.2 *Timber*

3.1.2.1 Any of the timber species listed in Appendix A shall be used in the manufacture of back and handle of the brush as shown in Fig. 1.


38 STEPPED HOLES ALL-ROUND ON THE OUTSIDE
EQUALLY SPACED (FOR DETAILS SEE SECTION VIEW OF HOLE)
500 APPROX
33
6 mm ϕ HOLE
14
38
60
38 STEPPED HOLES INSIDE EQUALLY SPACED (FOR DETAILS SEE SECTION VIEW OF HOLE)
1·5 THICK BACK SECURED WITH 9·5 mm ϕ BRASS PINS
12
50
X
X
65
57
24
68
60R
60R
26
80
51
*DIMENSION 'A' PROGRESSIVELY INCREASED ACCORDING TO SHAPE AND THICKNESS OF THE BLADE
3ϕ
12
*A
6ϕ
ENLARGED SECTION OF STEPPED HOLE
STAPLE OF BRIGHT IRON WIRE 0·900 mm (20 SWG) ϕ
(MACHINE MADE)
ENLARGED SECTION XX
TWINE
BACK
(HAND MADE)
ENLARGED SECTION XX

All dimensions in millimetres.

FIG. 1 BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

3.1.2.2 The timber shall be reasonably straight-grained and well-seasoned to a moisture content not exceeding 12 percent.

3.1.2.3 The timber shall be free from brashness, any kind of decay (rot), insect attack, centre heart (pith), knots (except pin knots), cracks, warp and any other defects which may reduce the life of the brush or affect its utility.

3.1.3 *Pins* — Flat, brass pins 9.5 mm (or ??? in.) in diameter shall be used for securing.

3.1.4 *Wire* — Brass or copper wire of 0.450 mm to 0.560 (or 26 to 24 SWG) in diameter shall be used for fastening tufts of filling material.

3.1.5 *Staples* — Bright iron wire staples 0.900 mm (or 20 SWG) in diameter shall be used.

3.2 Dimensions and Tolerances

3.2.1 The brushes shall conform to the dimensions given in Fig. 1.

3.2.2 The tolerance on the linear dimensions shall be as follows:

Nominal Dimension mm	*Tolerance* mm
Up to 12	± 0.4
13 „ 38	± 0.8
39 „ 100	± 1.6

3.2.3 A tolerance of ± 0.8 mm shall be allowed on the diameter of the tuft holes.

3.3 Manufacture

3.3.1 The brushes shall generally conform to the shape and design as shown in Fig. 1.

3.3.2 *For Hand-Made Brushes* — The back shall be properly prepared to fit snugly with the curved head portion of the hand-made brushes. It shall completely cover the visible wire fastening on the back of the brush head.

3.3.3 The filling material fibres shall be doubled in the form of knots, and shall be securely set to the bottom of the tapered knot-holes to give the shape of the brush head as shown in Fig. 1.

3.3.3.1 The tufts of filling material shall be further secured by brass or copper wire through the loops formed by doubling of filling material fibres.

3.3.3.2 *For machine-made brushes* — The tufts of filling material shall be cross-stapled and securely set to the bottom of the knot-holes by machine to give the shape of the brush as shown in Fig. 1.

3.4 Workmanship and Finish

3.4.1 The head and the handle of the brush shall be smoothly finished and suitably painted with a 5 percent solution of copper naphthenate (conforming to IS: 1078-1957 Specification for Copper Naphthenate) in petroleum hydrocarbon solvent 60/80 (conforming to IS : **1745-1961** Specification for Petroleum Hydrocarbon Solvents).

3.4.2 The tufts of filling material shall be as free from short fibres as the approved sample.

3.4.3 In general workmanship and finish, the brushes shall match the approved sample.

3.5 Tests

3.5.0 The brushes shall satisfy the following tests.

3.5.1 *Pull Test* — The tufts of filling material shall not pull out when subjected to a straight pull between thumb and finger grip.

3.5.2 *Weight of Filling Material per Finished Brush* — Unfasten tufts by removal of wire. Determine the total weight of filling material.

3.5.2.1 The total weight of filling material per brush shall be a minimum of 75 g. A tolerance of ± 5 percent shall be allowed in the weight of the filling material provided the average weight of the filling per brush in any lot is that specified. The average weight of filling per brush in a lot shall be assessed by taking the aveiage weight of three brushes in lots not exceeding 300 brushes and of six brushes in lots exceeding 300 brushes.

4. MARKING

4.1 Unless otherwise agreed to between the indentor or inspection authority and the supplier, each brush shall be legibly and indelibly marked or stamped with the manufacturer's name or recognized trade-mark, if any, and the year of manufacture.

4.1.1 The brushes may also be marked with the **ISI** Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-denned system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be minted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 The supplier shall submit three identical brushes for approval.

5.2 The indentor or inspection authority shall retain one of the three samples approved.

5.3 Representative samples for test shall be drawn as prescribed in Appendix B.

APPENDIX A

(*Clause* 3.1.2.1)

SPECIES OF TIMBER FOR THE MANUFACTURE OF BACK AND HANDLE OF BRUSH, (i) CLEANING TANK, AND (ii) COMMODE AND LAVATORY

A-1. The following species of timber are approved for the manufacture of back and handle of brushes, (i) cleaning tank, and (ii) commode and lavatory:

TRADE NAME		BOTANICAL ORIGIN
Roman	*Devanagari*	
aini	ऐनी	*Artocarpus hirsuta Lamk.,* fam. Moraccæ
banati	बनाती	*Lophopetalum wightianum* Am., fam. Celastraceæ
badam	वादाम	*Prunus amygdalus* Batsch., fam. Rosaceæ
bijasal	बीजसाल	*Pterocarpus marsupium* Roxb. fam. Lcguminosæ
champak	चम्पक	*Michelia champaca* Linn., fam. Magnoliaceæ

TRADE NAME		BOTANICAL ORIGIN
Roman	*Devanagari*	
chickrassi	चिकरसी	*Chukrasia tabularis* A. Juss., fam. Meliaceæ
dhaman	धामन	*Grewia tiliifolia* Vahl., fam. Tiliaceæ
gamari (gumhar)	गमारी (गुम्हार)	*Gmelina arborea* L. fam. Verbenaceæ
haldu	हल्दु	*Adina cordifolia* Hook. f., fam. Rubiaceæ
kaim	कैम	*Mitragyna parvifolia* (Roxb.) Korth., syn. *Stephegyne parvifolia* Korth., fam. Rubiaceæ
kanju	कांजू	*Holoptelea integrifolia* (Roxb.) Planch., fam. Ulmaceæ
kathal	कटहल	*Artocarpus heterophyllus* Lamk., syn. A. integrifolius Auct., fam. Moraceæ
kuthan	कूथन	*Hymenodictyon excelsum* Wall., fam. Rubiaceæ
lambapatti	लम्बापत्ती	*Planchonella longipetiolatum* H. J. Lam., syn. *Sideroxylon longipetiolatum* King & Prain., fam. Sapotaceæ
aam (mango)	आम	*Mangifera indica* Linn., fam. Anacardiaceæ
nim-chameli	नीम-चमेली	*Millingtonia hortensis* Linn., f., fam. Bignoniaceæ
kodapalai choupaini (piney)	कोडपलई (चौपैनी)	*Kingiodendron pinnatum* Harms., syn. *Hardwickia pinnata* Roxb., fam. Leguminosæ
toon	तून	*Toona ciliata* Roem., syn. *Cedrela toona* Roxb., fam. Mcliaceæ

APPENDIX B

(*Clause* 5.3)

SAMPLING OF BRUSHES AND CRITERIA FOR CONFORMITY

B-1. SCALE OF SAMPLING

B-1.1 Lot — In any consignment, all the brushes of the same quality shall be divided into groups of 500 brushes or less and each such group shall constitute a lot. Care shall be taken to ensure that brushes included in a lot do not differ in construction, as far as possible.

B-1.1.1 The conformity of the brushes in a lot to the requirements of this specification shall be ascertained for each lot separately. The number of brushes to be selected for this purpose shall be in accordance with col 1 and 2 of Table I.

TABLE I SCALE OF SAMPLING

No. OF BRUSHES IN THE LOT *N* (1)	No. OF BRUSHES TO BE SELECTED n (2)
Up to 10	2
11 „ 25	3
26 „ 50	4
51 „ 100	5
101 „ 150	6
151 „ 300	7
301 „ 500	8

B-1.1.2 The brushes shall be selected at random. To ensure randomness of selection, one of the following procedures is recommended for use :

a) If all the brushes in a lot are packed in one box, then starting from any brush, count them in any suitable order as 1,2,...... up to *r* and so on, where *r* is the integral part of *N/n* (*N* and *n* being the lot size and sample size respectively). Every *r*th brush thus counted shall be withdrawn to constitute the sample.

b) If the brushes in a lot are packed in more than one box, approximately equal number of brushes shall be picked up at random from as many boxes as possible so as to obtain the required number of brushes as specified in Table I.

B-2. CRITERIA FOR CONFORMITY

B-2.1 For declaring the conformity of the lot to the requirements of this specification, all the brushes selected according to **B-1.1.2** shall satisfy the relevant requirements given in 3.

NOTE — For description of filling material (*see* **3.1.1**) and workmanship and finish (*see* **3.4**), the brushes selected according to **B-1.1.2** shall be matched with the approved sample, be suitably stamped and sealed by the indentor or the inspection authority and the supplier and kept at a place agreed to between them.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mast	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^{2}
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^{2}
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^{3}

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